Periscope.

PHYSIOLOGY OF NERVOUS SYSTEM.

The Physiology of the Hippocampus Major. Experimental Researches by Dr. GIUSEPPE FASOLD. *Rivista Sperimentale di Freniatra e di Med. Seg.*, anno xi., Fasc. iv., 1886.

This elaborate and interesting article is the result of experimentation performed at the physiological laboratory at Florence, in the Royal Institute, under the direction of Prof. Luciani.

The writer first reviews the various anatomical notions held in regard to the region of the hippocampus, and next the function of the hippocampus as set forth by different authorities, when he records his methods and experimentations, from which he deduces the following conclusions :

1. The hippocampus major stands in direct relation with the function of vision, of hearing, and of smell. It is one of those regions in which there is an accumulation or partial confusion of the diverse sensorial centres.

2. The sensitive fibres emanating from the hippocampus major and destined to the organs of vision have a partial decussation, in order to have a peripheric analogous distribution in the retinal field, with a predominance of the crossed fibres over the direct.

3. So the auditory fibres coming from the hippocampus major undergo a partial decussation like the visual, with a predominance of the crossed over the direct fibres.

It is probable that the olfactory fibres derived from the substance of the Ammon do not undergo decussation, or it may be such as to divide them equally between the two sides.

GRACE PECKHAM.

On Heat, Considered as the Retinal Intermediate of Light- and Color-Sensation. By L. WEBSTER FOX, M.D., and GEO. M. GOULD, A.B., of Philadelphia. *Am. Jour. of Ophthal.*, July, 1886.

The aim of the authors is to advance, and in part substantiate, the thought expressed in the title. Previous theories, especially the Young-Helmholtz and the Hering theories, have been found

essentially deductive, mutually destructive of one another, and altogether unsatisfactory in giving one the least glimpse of the *modus operandi* of the transmutation of ether-waves into the sensations of light and color. Indeed, any attempt at an explanation of the production of these psychical phenomena is expressly disclaimed by the authors, who hold that these are purely cerebral products, resulting from neural transmissions of retinal indications and changes. To throw light on the nature of this retinal function is the limited object, and, so far as the present goes, the only one promising any success. Thus the old doctrine of the specific or differentiating functions of the peripheral end-organs, upon which all previous theories of chromatic and achromatic sensation are based, is frankly discarded and the retina is reduced to a quantitative transfer of the stimulus, coupled with the fruitful theory of Local Signs. The essential nature of this transmutation or transference is considered to be a refined and delicate sensation of slight temperature changes. The ground for this conception is found to consist especially in the law of physics whereby the kinetic energies of the ether-wave, itself a product of atomic or molecular activity, can only produce mechanical energy to which nervous force is held to be allied rather than to atomic or (to chemical forces) by inducing atomic or molecular activity in a receiving medium (the retinal pigment layer). The height of this aroused molecular activity is, of course, proportioned to the ethereal wave-length, and the rods and cones transmit to the brain, just as the sensory nerves of the skin, the quantitative indications of these differing elevations of molecular energy. Many interesting facts are adduced from allied fields of research in support of this view. Especially noticeable is the experiment conducted by the authors upon themselves, by which chromatic sensation was quickly chilled into non-existence by the application of a crayon of ice to the sclerotic opposite the seat of retinal activity, the heightening of the same process by the application of heat, *etc.*, results which must follow from the premises. The additional time required for cerebral response to chromatic stimulus over that required by the mechanical stimulation of dermal end-organs is, also considered to point to the difficulty the fragile ether-wave finds in arousing the molecular agitation of the retinal reception medium in a state of unstable equilibrium, and of the transfer of this force to the optic-nerve end-organs.

This conception of the essential nature of the retinal process cannot be considered as any thing less than highly ingenious, logical, and suggestive, and our readers who feel any interest in the subject are advised to turn to the full treatment of the authors, rather than trust to the meagre outline above given. It seems from a note to the article that the idea and its working-out was wholly original with the authors, who subsequently found that the central thought of the theory had been already advanced by others, though reached by utterly different routes from as independent starting-points.